GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

RD – MGNREGS-AP – Construction of Cement Concrete Roads with side drains in convergence with other funds – Technical Guidelines issued.

PANCHAYAT RAJ & RURAL DEVELOPMENT (RD.II) DEPARTMENT

G.O.MS.No. 91 **Dated:16.09.2015**

Read the following:

Ref: -1.G.O Ms No.58, PR&RD(RDII) Dept., Dt.18.06.2015.
2.Proposal of the Technical Advisor O/o the CPR&RD Dt.08.09.015

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ORDER :

Government vide reference first cited have issued certain guidelines for construction of Cement Concrete Roads in convergence with other funds.

2. The Technical Advisor, O/o the CPR&RD, AP, Hyderabad vide reference second read above has submitted proposal for issue of technical guidelines for construction of CC Roads and Under Ground Drainage system.

3. Government after careful examination hereby approved the following technical guidelines for construction of CC Road and Under Ground Drainage system.

Technical Guidelines :

I. CC Roads:

1. The following specifications of CC Roads shall be adopted for the types of soils given below.

i. *CC Roads in Hard Soils:* Granular sub base (Gravel / stone dust / Gravel with stone dust) 100mm consolidated thickness + WBM Gr.II 75mm consolidated thickness + CC pavement 125mm thick with M30 grade concrete with 380kg of cement per cum of concrete.

ii. *CC Roads in BC soils:* Granular sub base (Gravel / stone dust / Gravel with stone dust) 150mm consolidated thickness + CC(1:4:8) 75mm thick + CC pavement 125mm thick with M30 grade concrete with 380kg of cement per cum of concrete.

iii. The load carrying capacity of a concrete road structure lies mainly in the structural rigidity of the slab and the uniformity of sub grade support. It is therefore necessary to prepare the base in such a way that the concrete slabs are supported uniformly.

2. Thickness of Road:

During the execution of CC roads the following cases may arise depending upon the existing surfaces.

A. *CC road over existing earthen surface :*

i. Granular sub base 100mm compacted thickness.

ii. WBM Gr II 75mm compacted thickness.

iii. CC pavement 125mm thickness with M30 grade concrete with 380kg of cement per cum of concrete.

B. *CC road over existing gravel sub-base :*

i. Key Walls of size 0.23m width and 0.30m depth with CC (1:3:6) is to be provided along the length of the road over Granular (Gravel) sub base.

ii. The width of the road outer to outer of key walls will be 3.0m. Thus the width of the road in between key walls shall be 2.54m ie.,(3.0-2x 0.23=2.54m).

iii. In between key walls, Granular material (Gravel / Stone dust) to be filled up to a depth of 0.10m and compressed properly.

iv. CC road layer of 125mm thick with M30 Grade concrete using 380kg of cement per cum of concrete over Granular filling

"OR"

v. WBM Gr II 75mm thickness and CC layer 125mm thick with M30 grade concrete with 380kg of cement per cum of concrete above WBM

C. *CC road over existing WBM Gr.II :*

i. Stone dust of 0.05m (2") to level undulations if WBM road is done long back.

ii. CC Pavement 125mm thick with M30 grade concrete with 380kg of cement per cum of concrete

Note: In BC Soil areas, they have to be modified suitably.

3. Based on the availability of water and prevailing local conditions, the CC roads can be taken up as per the following types of construction :
    i. Conventional methods as detailed above
    ii. Precast Concrete Blocks for Paving (IS : 15658:2006)
        - M40-80mm thick for medium traffic may be followed.
        - 50mm thick sand bed is necessarily to be provided under the blocks
        - A total specification is enclosed for information **(Annexure-I)**
    iii. Vacuum Dewatered Flooring
    The Technical note is enclosed **(Annexure II).**
4. **Width of the Internal Road with Cement Concrete** :
    i. Width shall not exceed 3.0m under MGNREGS as per the MGNREGS guidelines. Hence 3.0m width of CC roads shall be provided under MGNREGS in convergence with other funds.
    ii. Whenever it is required to take up more than 3.0m width of CC pavement, the design of road thickness and drains to be arrived as per IRC: SP: 62 – 2014. The additional amount required over and above 3.0m width has to be met out of the other available funds.
    iii. Where the **main road** passes through the village, the design of road thickness and drains to be arrived as per IRC: SP: 62-2014 guidelines.
5. **Joint Spacing:** For all purposes, Joint spacing of 2.50m shall be adopted.
6. **General:**
    i. Side berms of 1.0m width to be provided on either side with selected earth or granular material (Gravel / stone dust / Gravel with stone dust)
    ii. Maximum size of aggregates shall not be more than 25mm.
    iii. Pin and Pan vibrator shall be invariably used during execution for attaining required strength
    iv. Curing shall also be done for 28days without break.

7. Quality Control:

i. Cubes shall be casted during execution and shall be tested for 7 days and 28 days and the compressive strength arrived and it shall be more than required / permissible strength. Payment shall be made after production of cube strength results.

ii. Core cutting shall be done for works costing more than Rs.50.0Lakhs before making payment.

iii. QC wing of PR Dept will check the works at random and advise the field staff and higher officials regarding the changes if any required in construction and quality assurance. This shall be made clear to the Gram Panchayats / VWC/ VDC

II. Under Ground Drainage system:

i. A comprehensive village map along with levels and duly fixing the out fall drain shall be prepared before starting any work. The existing side drains with levels shall also be indicated. The layout plan shall be approved by the Gram Panchayat and it shall be displayed in the GP Office invariably.

ii. It will facilitate that as and when the funds are available, the drainage system will be provided according to the GP approved layout plan.

iii. For all the new formations, the underground drainage shall be at the centre of the road.

iv. For existing CC road portions, the underground drainage system shall be taken up at one side / both sides of the road depending on the house locations with suitable manholes/ chambers.

v. Liquid waste from the bath rooms, kitchen, and storm water shall only be allowed in the drains.

vi. Liquid Waste from W.Cs. should not be allowed into the drains.

vii. The drains should be designed both to carry household grey water (other than W.C. liquid waste) and rain water discharge.

viii. Model design calculation of the quantity of liquid waste to discharge both grey water ie., liquid waste from Kitchen, Bath room of households and storm water is enclosed.

ix. The design calculations for surface and subsurface drainage systems as given under Chapter 7 of Practical Engineering for PR Engineers written by Late Sri P. Ganeswara Rao , the then CE(PR) V&QC is enclosed for ready reference (Annexure III). An extract of Manual on sewerage and treatment systems for calculation of discharge through circular pipes based on Mannings formula is also enclosed for guidance(Annexure IV)

x. It is preferable to go in for RCC NP2 class pipes with a minimum over burden as specified for pipes instead of PVC pipes as mentioned in the above designs. Corresponding diameters of RCC pipes can be utilized depending upon their manufacturers.

xi. The pipes should be laid over bed of concrete and filled up with Granular soils.

xii. As far as possible, the main street should be provided with not less not 300mmdia to allow the entire discharge. If higher diameter pipe is required as per area calculations, the same may be provided.

xiii. For other streets the diameter may be provided as per design.

xiv. Proper slopes should be maintained to see that liquid waste does not stop at any point and goes to the tail-end. Preferably slope of the drain @ 1:200

xv. In rocky areas of hilly region, where natural slopes available, there is no need to go for underground drainage system for draining storm water. In such cases, side drain for draining the liquid waste from the bathrooms, kitchen only to be designed. If underground drainage is not feasible due to rocky surface, open drains can be adopted.

xvi. Manholes for connecting houses liquid waste (grey water) to the drainage system with a size of not less than 0.30m X 0.30m X 0.30m with mesh to be proposed so as to avoid the entry of solid waste from the house area to the drainage system.

xvii. Storm water collection chambers also to be provided covered with mesh to avoid entry of debris in the pipes which will also function as inspection chamber.

xviii. No. of chambers may vary depending upon the discharge as per design. However one in 50m length is suggested.

xix. At every change of alignment, gradient or diameter of a drain, there shall be an inspection chamber.

xx. At the tail-end point, this liquid waste should be taken into regular drainage scheme and let-out if possible after proper purification.

The Commissioner, PR&RD shall take necessary action accordingly.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

S.P.TUCKER
Special Chief Secretary (Planning) and
Principal Secretary to Government (RD) (FAC)

To:

The Commissioner, Panchayat Raj & Rural Development, AP, Hyderabad with a request to communicate to all the following officials concerned in the State.
The Director, MGNREGS–AP, Hyderabad
All the District Collectors and District Programme Coordinators
The Chief Engineer(PR), MGNREGS, Hyderabad
The Engineer-in-Chief, PRE Department, Hyderabad
All the Project Directors, DWMAs and Addl. Dist. Programme Coordinators
All the Programme Officers, MGNREGA / Mandal Parishad Development Officers
All the Chief Executive Officers, Zilla Parishads
All the Project Officers, ITDA and Addl. Dist. Programme Coordinators
All the Superintending Engineers, PR Department
All the District Panchayat Officers
All the Executive Engineers, PR Department
The Project Manager, IT O/o the CRD, Hyderabad
The Deputy Commissioner O/o the CRD, Hyderabad

Copy to:

The Accountant General, A.P., Hyderabad
The Director of Treasuries and Accounts, A.P., Hyderabad
The Special Secretary to Hon'ble Chief Minister
The PS to Minister (PR, RWS & NREGS)
The PS to Chief Secretary to Government
The PS to the Spl CS & Principal Secretary(RD)(FAC)
The Tribal Welfare Department, A.P., Hyderabad
The Technical Advisor, RD, O/o CRD
SF/SC

//FORWARDED :: BY ORDER//

SECTION OFFICER